providing an oxygen barrier composition comprising an oxygen barrier polymer and an oxygen scavenging polymer, wherein the oxygen barrier polymer is selected from poly(ethylene/vinyl alcohol) (EVOH), polyacrylonitrile (PAN), copolymers comprising acrylonitrile, poly(vinylidene dichloride) (PVDC), or polyamides not derived from xylylene diamine-based monomers; and the oxygen scavenging polymer is a polyamide oligomer or polymer derived at least in part from a xylylene diamine-based monomer;

forming the composition into the packaging article or an oxygen barrier layer thereof; and

forming a transition metal salt into the oxygen barrier layer or a layer adjacent to the oxygen barrier layer of the packaging article.

46. (Amended) The method of claim 40, wherein the forming step further comprises forming an oxygen barrier layer in the packaging article, wherein the oxygen barrier layer does not comprise a polyamide derived at least in part from a xylylene diamine-based monomer.

REMARKS

1. Status of claims

After entry of the above amendment, claims 1-17, 19-30, 35-42, and 44-49 are pending and under consideration.

2. Support for amendment

The above amendment (a) incorporates limitations previously found in dependent claims 18 and 43 into their parent independent claims, 14 and 40, respectively and (b) corrects a typographical error of "xylene diamine" with the correct term "xylylene diamine." A copy of the claims, with insertions and deletions indicated by underlining and brackets, respectively, is attached hereto as an Appendix. No new matter has been added by this amendment.

3. Claim rejections under 35 U.S.C. §102

Claims 14-17, 25-30, 40-42, and 45-59 are rejected under 35 U.S.C. §102(b) as being anticipated by Degrassi et al., U.S. Pat. No. 5,547,765 (hereinafter "Degrassi"). The Examiner alleges Degrassi discloses a composition which may be in the form of a layer comprising EVOH and MXD6. In light of the above amendment, Applicants hold that the basis for this rejection has been removed.

Specifically, independent claims 14 and 40, and all claims depending thereon, have been amended to recite the inclusion of a transition metal salt in the layer comprising a barrier polymer and the scavenging polymer derived at least in part from xylylene diamine. Degrassi is silent with regard to articles comprising an EVOH and MXD6 layer and a transition metal salt in the aforesaid layer or an adjacent layer. Claims 18 and 43, pending prior to entry of the above amendment, were equivalent in scope to amended claims 14 and 40, and were not considered by the Examiner to be anticipated by Degrassi. Therefore, Applicants hold this rejection of claims 14-17, 25-30, 40-42, and 45-49, as amended, should be withdrawn.

4. Claim rejections under 35 U.S.C. §103

Claims 1-30 and 35-49 are rejected under 35 U.S.C. §103(a) as being unpatentable over Akkapeddi et al., U.S. Pat. No. 6,423,776 (hereinafter "Akkapeddi") in view of either Speer et al., U.S. Pat. No. 5,211,875 (hereinafter "Speer '875") or Speer et al., U.S. Pat. No. 5,498,364 (hereinafter "Speer '364"). Applicants respectfully traverse this rejection.

First, Applicants wish to make it clear that one of ordinary skill in the art would recognize the term "polyamide oligomer or polymer derived at least in part from a xylylene

diamine-based monomer" as an oligomer or polymer wherein the bonds between monomer units are essentially all amide bonds (p. 10, lines 11-19). This is especially true for claims to MXD6 as the oxygen scavenging polymer (*e.g.*, claim 4, among others).

Akkapeddi teaches polymers comprising a polyamide, of which MXD6 is one of many listed at col. 4, line 65-col. 5, line 15, and a *nylon-reactive oxidizable* polydiene (col. 5, lines 20-22, emphasis added). Akkapeddi clearly teaches a copolymer comprising polyamide blocks and polydiene blocks (col. 5, lines 24-29). Also, Akkapeddi clearly teaches that the polydiene is oxidizable, but provides no evidence that MXD6 is sufficiently oxidizable to adequately scavenge oxygen in a commercial application. Although the Examiner points to Akkapeddi's Examples, tabulated at cols. 15-16, and alleges Akkapeddi teaches MXD6 alone is sufficiently oxidizable based on these Examples, Akkapeddi only shows that a cast film comprising MXD6 and 100 ppm Co (Comparative Example 7) has about a 2-fold lower oxygen *transmission* rate than a cast film comprising MXD6 alone (Comparative Example 6). However, there is no unambiguous evidence that the presence of 100 ppm Co made the difference, given that the cast film of Comparative Example 7 went through additional process steps in its production. Also, Akkapeddi does not provide an unambiguous statement that the lower oxygen *transmission* rate of Comparative Example 7 is a result of oxygen *scavenging* by the composition of this comparative example. One of ordinary skill in the art could not exclude the possibility that the additional process steps, the presence of cobalt, or both may have led to changes in the microstructure of the cast film which strengthened its properties as an oxygen barrier without imparting oxygen scavenging.

The Examiner also points to Akkapeddi's Examples 18-21 as teaching blends of EVOH with polyamides, but Akkapeddi states that, of these examples, "the samples containing the

oxygen scavenging copolymer [*i.e.*, samples containing nylon 6 and polybutadiene and processed under conditions wherein these two polymers form a bond, Examples 20-21] exhibit oxygen scavenging" (col. 15, lines 20-22).

In summary, then, Akkapeddi fails to teach or suggest that a polyamide derived at least in part from a xylylene diamine-based monomer is a useful oxygen scavenging polymer in a blend with an oxygen barrier polymer such as EVOH, PAN, PVDC, or other oxygen barrier polymers set forth at *e.g.* claim 1, and a transition metal oxidation catalyst. Whether Speer '875 or Speer '364 discusses photoinitiators is moot in the context of the Examiner's argument.

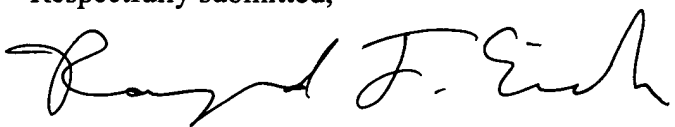
Applicants note that both Speer '875 and Speer '364, at Example 10 of each, refer to blends of MXD6 with a photoinitiator and 500 ppm cobalt. However, the blends of Speer '875 and Speer '364 consumed only about 45%-60% of the oxygen in an air sample after 63 days. In contrast, blends comprising, in place of MXD6, polymers such as 1,2-polybutadiene (Examples 2, 3, and 5) consumed about 100% of the oxygen in an air sample in much less than 63 days. From this, one of ordinary skill in the art would consider, *e.g.*, 1,2-polybutadiene for oxygen scavenging uses far more readily than one would consider MXD6. Therefore, there exists no motivation in these references to use a polyamide derived at least in part from xylylene-diamine based monomers as an oxygen scavenging polymer in a blend with EVOH or another barrier polymer or polymers, and this rejection should be withdrawn.

5. Final comments

In conclusion, Applicants hold that all pending claims under consideration, namely claims 1-17, 19-30, 35-42, and 44-49, are in condition for allowance. The Examiner is invited to

contact the undersigned patent agent at (713) 934-4065 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,



Raymund F. Eich, Ph.D.
Reg. No. 42,508

AGENT FOR APPLICANTS

WILLIAMS, MORGAN & AMERSON, P.C.
10333 Richmond, Suite 1100
Houston, Texas 77042
(713) 934-4065
(713) 934-7011 (fax)

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APPENDIX

Amended Claims:

1. (Amended) An oxygen barrier composition, comprising:

a oxygen barrier polymer, an oxygen scavenging polymer, and an oxidation catalyst, wherein the oxygen barrier polymer is selected from poly(ethylene/vinyl alcohol) (EVOH), polyacrylonitrile (PAN), copolymers comprising acrylonitrile, poly(vinylidene dichloride) (PVDC), or polyamides not derived from [xylene] xylylene diamine-based monomers; and the oxygen scavenging polymer is a polyamide oligomer or polymer derived at least in part from a [xylene] xylylene diamine-based monomer.

2. (Amended) The composition of claim 1, wherein the oxygen scavenging polymer comprises from about 10 mol% to about 50 mol% units derived from a [xylene] xylylene diamine-based monomer.

14. (Amended) A packaging article, comprising:

(a) at least one oxygen barrier layer comprising an oxygen barrier polymer and an oxygen scavenging polymer, wherein the oxygen barrier polymer is selected from poly(ethylene/vinyl alcohol) (EVOH), polyacrylonitrile (PAN), copolymers comprising acrylonitrile, poly(vinylidene dichloride) (PVDC), or polyamides not derived from [xylene] xylylene diamine-based monomers; and the oxygen scavenging polymer is a polyamide oligomer or polymer derived at least in part from a [xylene] xylylene diamine-based monomer; and

(b) a transition metal salt in the oxygen barrier layer or a layer adjacent to the oxygen barrier layer.

15. (Amended) The packaging article of claim 14, wherein the oxygen scavenging polymer comprises from about 10 mol% to about 50 mol% units derived from a [xylene] xylylene diamine-based monomer.

18. (Canceled)

27. (Amended) The packaging article of claim 14, further comprising an oxygen barrier layer, wherein the oxygen barrier layer does not comprise a polyamide derived at least in part from a [xylene] xylylene diamine-based monomer.

28. (Amended) The packaging article of claim 27, wherein the oxygen barrier layer not comprising a polyamide derived at least in part from a [xylene] xylylene diamine-based monomer comprises poly(ethylene vinyl alcohol) (EVOH), polyacrylonitrile (PAN), a copolymer comprising acrylonitrile, poly(vinylidene dichloride) (PVDC), polyethylene terephthalate (PET), polyethylene napthalate (PEN), or polyamide other than MXD6.

36. (Amended) A method of making an oxygen barrier composition comprising an oxygen barrier polymer, an oxygen scavenging polymer, and an oxidation catalyst, wherein the oxygen barrier polymer is selected from poly(ethylene/vinyl alcohol) (EVOH), polyacrylonitrile (PAN), copolymers comprising acrylonitrile, poly(vinylidene dichloride) (PVDC), or polyamides not derived from [xylene] xylylene diamine-based monomers; and the oxygen scavenging polymer is a polyamide oligomer or polymer derived at least in part from a [xylene] xylylene diamine-based monomer:

providing the oxygen barrier polymer, the polyamide derived at least in part from a [xylene] xylylene diamine-based monomer, and the oxidation catalyst; and

blending the oxygen barrier polymer, the polyamide, and the oxidation catalyst, to form the oxygen barrier composition.

40. (Amended) A method of forming an oxygen barrier layer in a packaging article, comprising:

providing an oxygen barrier composition comprising an oxygen barrier polymer and an oxygen scavenging polymer, wherein the oxygen barrier polymer is selected from poly(ethylene/vinyl alcohol) (EVOH), polyacrylonitrile (PAN), copolymers comprising acrylonitrile, poly(vinylidene dichloride) (PVDC), or polyamides not derived from [xylene] xylylene diamine-based monomers; and the oxygen scavenging polymer is a polyamide oligomer or polymer derived at least in part from a [xylene] xylylene diamine-based monomer; [and]

forming the composition into the packaging article or an oxygen barrier layer thereof; and

forming a transition metal salt into the oxygen barrier layer or a layer adjacent to the oxygen barrier layer of the packaging article.

43. (Canceled)

46. (Amended) The method of claim 40, wherein the forming step further comprises forming an oxygen barrier layer in the packaging article, wherein the oxygen barrier layer does not comprise a polyamide derived at least in part from a [xylene] xylylene diamine-based monomer.